

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-30 (cancelled).

31. (new) A packet fiber node for use in an access network, the access network including a Head End and a plurality of network nodes, the packet fiber node comprising:

at least one processor;

memory;

a first interface for communicating with the Head End; and

a second interface for communicating with at least a portion of the plurality of network nodes;

the packet fiber node being operable to communicate with the Head End using baseband optical signals that are received at the packet fiber node from the Head End and transmitted to the Head End by the packet fiber node; and

the packet fiber node being operable to permit the Head End to perform at least one of: service flow management operations relating to downstream channel service flow management; packet classification operations relating to downstream channel classification; and MAC management operations relating to MAC management of downstream channels in the access network.

32. (new) The packet fiber node of claim 31 wherein the packet fiber node is operable to permit the Head End to perform service flow management operations relating to downstream channel service flow management.

33. (new) The packet fiber node of claim 31 wherein the packet fiber node is operable to permit the Head End to perform packet classification operations relating to downstream channel classification.

34. (new) The packet fiber node of claim 31 wherein the packet fiber node is operable to permit the Head End to MAC management operations relating to MAC management of downstream channels in the access network.

35. (new) The packet fiber node of claim 31 wherein the packet fiber node is not operable to perform service flow management operations relating to downstream channel service flow management.

36. (new) The packet fiber node of claim 31 wherein the packet fiber node is not operable to perform packet classification operations relating to downstream channel classification.

37. (new) The packet fiber node of claim 31 wherein the packet fiber node is not operable to perform MAC management operations relating to MAC management of downstream channels in the access network.

38. (new) The packet fiber node of claim 31 wherein the access network corresponds to a cable network implemented in accordance with a standardized DOCSIS protocol;  
the packet fiber node being further operable to perform functions relating to DOCSIS MAC scheduling operations.

39. (new) The packet fiber node of claim 31 wherein the access network corresponds to a cable network;  
the packet fiber node being further operable to handle layer 1 and layer 2 functionality.

40. (new) The packet fiber node of claim 31 wherein the access network corresponds to a cable network, and wherein the network nodes correspond to cable modems, the cable network including a first RF fiber node operable to communicate with the Head End using frequency modulated optical signals, the first RF fiber node further being operable to service a first group of cable modems and a second group of cable modems;

the cable network further including a first packet fiber node and a second packet fiber node, each packet fiber node being operable to communicate with the Head End using baseband optical signals;

the first packet fiber node being operable to service the first group of cable modems;

the second packet fiber node being operable to service the second group of cable modems.

41. (new) The packet fiber node of claim 31 wherein the access network corresponds to a cable network, and wherein the network nodes correspond to cable modems;

the packet fiber node being further operable to receive IP packets from a portion of the cable modems; and

wherein the packet fiber node is further operable to transmit the received IP packets to the Head End using a tunneling protocol.

42. (new) The packet fiber node of claim 31 wherein the access network corresponds to a cable network, and wherein the network nodes correspond to cable modems;

the packet fiber node being further operable to receive IP packets from a portion of the cable modems; and

wherein the packet fiber node is further operable to transmit the received IP packets to the Head End using an IP protocol.

43. (new) A system for use in an access network, the system comprising:

a Head End;

a plurality of network nodes;

a first fiber node operable to facilitate communications between the Head End and the plurality of nodes;

the fiber node being operable to communicate with the Head End using baseband optical signals that are received at the fiber node from the Head End and transmitted to the Head End by the fiber node; and

the fiber node being operable to permit the Head End to perform at least one of: service flow management operations relating to downstream channel service flow management; packet classification operations relating to downstream channel classification; and MAC management operations relating to MAC management of downstream channels in the access network.

44. (new) The system of claim 43 wherein the fiber node is operable to permit the Head End to perform service flow management operations relating to downstream channel service flow management.

45. (new) The system of claim 43 wherein the fiber node is operable to permit the Head End to perform packet classification operations relating to downstream channel classification.

46. (new) The system of claim 43 wherein the fiber node is operable to permit the Head End to MAC management operations relating to MAC management of downstream channels in the access network.

47. (new) The system of claim 43 wherein the fiber node is not operable to perform service flow management operations relating to downstream channel service flow management.

48. (new) The system of claim 43 wherein the fiber node is not operable to perform packet classification operations relating to downstream channel classification.

49. (new) The system of claim 43 wherein the fiber node is not operable to perform MAC management operations relating to MAC management of downstream channels in the access network.

50. (new) The system of claim 43 wherein the access network corresponds to a cable network, and wherein the network nodes correspond to cable modems;  
the fiber node being further operable to receive IP packets from a portion of the cable modems; and  
the fiber node being further operable to transmit the received IP packets to the Head End using a tunneling protocol.

51. (new) The system of claim 43 wherein the access network corresponds to a cable network, and wherein the network nodes correspond to cable modems;  
the fiber node being further operable to receive IP packets from a portion of the cable modems; and  
the fiber node being further operable to transmit the received IP packets to the Head End using an IP protocol.